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Valois Shea
U.S. Environmental Protection Agency, Region 8
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Dear Ms. Shea:

This letter provides comments on the EPA's draft Underground Injection Control permits for the proposed Dewey-Burdock uranium project, as well as the associated proposed aquifer exemption, which would be located in the Black Hills of South Dakota.

The draft permits would allow the use of water from the Inyan Kara Aquifers for uranium mining using 4,000 Class III wells and the construction of up to four Class V deep disposal wells to pump mining wastes into the Minnelusa Aquifer. The exemption would cover part of the Inyan Kara Aquifers under the Safe Drinking Water Act. The Class III wells would be the first permitted by the EPA for in situ leach (ISL) uranium mining and would therefore set a precedent.

The organizations listed below oppose the EPA's proposed issuance of permits and the exemption for these purposes for the following reasons.

There are a number of shortcomings in the EPA's documents and process surrounding these draft permits and draft exemption. This letter will summarize some of the key issues.

The basic issue in this process has been the failure to adhere to the NEPA process. While the NRC has attempted to follow that process for the possession of nuclear materials, its actions have not covered a variety of current issues that are under the EPA's purview, particularly water issues. The applicant's project has also changed in important respects between the time the NRC began considering it and the time the EPA began considering it. Examples include:

- NRC documents consider the use of 4,000 gallons of water per minute for the mining and reclamation process. The EPA applications consider the use of 9,000 gpm, more than twice as much water.
- This project was originally described as involving 1,500 injection, recovery, and monitoring wells. By the time the EPA issued its draft permits, this had grown to 4,000 wells, nearly three times more wells.

- The projected bleed rates have varied over time, from .5% of the water used to 17% of the water used. In addition, the reverse osmosis process makes at least 30% of the water put through the RO process into waste, and this is not considered in the EPA documents. This seriously weakens all the assumptions and calculations on water use in the Class III draft permit documents.
- Documents prepared by Petrotek for Powertech/Azarga set subsurface water movement rates at 6 to 7 feet per year (without offering a source). NRC documents set the transmissivity rate in the Fall River formation at 255 $ft.^2$ per day and in the Lakota formation at 150 $ft.^2$ per day. Dr. Perry Rahn, Professor Emeritus from the South Dakota School of Mines and the acknowledged expert in these matters, said in a 2014 speech (which has since been submitted for publication) that groundwater velocity in the Inyan Kara Aquifers at the Dewey-Burdock site might be as much as 5,480 feet per year – over a mile -- which "might indicate fast groundwater movement through very permeable units of through fractures." The draft permits omit this critical information that could have very real impacts on wells that are downgradient of the proposed mine site.

These changes in the parameters of the proposed project go the heart of the information that informs the process in this case. The NRC and the EPA have had different projects submitted to them. The consideration of both projects would not be redundant – it would be sensible. The EPA should begin a thorough NEPA process to assess the project as it is currently proposed.

As part of the new process, the EPA should do thorough tribal consultation. The existing documents indicate that this process has barely begun, and yet draft permits have been issued. This makes a mockery of the consultation process, which should be completed well before draft permits are issued, so that the resulting information can be analyzed. The EPA must halt all further action until mutually-satisfactory consultation is completed. All cultural and historical properties must be given adequate protection.

The EPA also omits important issues from its Draft Cumulative Effects Analysis. Two that are glaring are the potential for mining wastes to be transported from other areas to Dewey-Burdock Class V wells and the potential for uranium mining to expand onto Powertech/Azarga's contiguous claims on the Wyoming side of the state line (the Dewey Terrace project). It's important to consider climate change, but it's also important to consider cumulative impacts that are on or adjacent to the proposed mine site.

Another important omission is that the draft permits beg the question of who is going to do on-the-ground regulation of the proposed mine and deep disposal wells. In 2011, the State of South Dakota suspended its ability to regulate in situ leach uranium mining, so it has no authority to do that regulation at this time. The NRC has two inspectors based in Texas, who visit ISL mines once or twice a year. There is no indication that their regulation can be competent or complete.

This is tremendously important. The draft permits include some very critical actions, such as testing the Minnelusa Aquifer to determine its water quality before deciding whether the company can proceed with deep disposal wells. This is a high-stakes test that can impact the future of the southwestern Black Hills. First of all, the water quality test should have been done under EPA's direct supervision before a draft permit was issued. If the Minnelusa's water turned

out to be appropriate for drinking water, the time and expense of creating the application and the Class V draft permit would have been avoided.

Second, if the permit is issued, the testing of the Minnelusa aquifer's water should be done under EPA's direct supervision, rather than allowing the company to do a test in the area of its choice using equipment it supervises, sending the sample to the lab of its choice, and expecting the people who use the Minnelusa Aquifer in the southern Black Hills to believe the results.

This brings us to another problem. Large portions of the documents used to support the EPA's draft permits are based on other permits that do not exist or that were prepared inadequately. For example, the EPA's documents defer repeatedly to the NRC's SEIS for the Dewey-Burdock project. This document echoed Powertech/Azarga's submissions in all important respects, rather than taking a hard look at the situation. The EPA documents also refer repeatedly to the requirements of an NPDES permit that has not even been applied for. And they refer frequently to a state Large Scale Mine Permit that has just barely begun the hearing process and is far from issuance. To rely on non-existent regulatory instruments for large portions of the permitting documents indicates both problems with the regulatory process and a lack of analysis of the proposed mine, deep disposal wells, and aquifer exemption.

Perhaps the most important omissions of information in the EPA's documents have to do with the confinement of mining fluids in the Class III wells areas. This goes to the heart of the safety of the project, and to the heart of the future of the region. There are real doubts whether the mining fluids can be contained at the proposed mine site. As Dr. Hannan LaGarry's research shows, there are around 7,500 old boreholes on the site, not the lower numbers put forward by the EPA or the company. This number comes from Dr. LaGarry's direct observation of Powertech's records. Even the lower numbers indicate that it is unlikely that all old boreholes can potentially be found and properly plugged.

In addition, research by Boggs and Jenkins (1980) indicated leakage across the Fuson shale between the Lakota and Fall River formations. Research by Wicks, Dean, and Kulander (2000) indicated that the Fall River formation is "pervasively fractured" along the western edge of the Black Hills. And research by Tank (1958), which may the only focused research on the Morrison formation in that area, indicates that the formation's thickness varies widely and that there is a "marked difference" between the formation's composition in Edgemont and seven miles north of Edgemont. The draft permits' heavy reliance on the Morrison formation as a confining layer should be re-considered, as the reality may not support the assumptions used in writing the draft permits. Given the information that is available, and given the importance of this particular issue, it is irresponsible to "conclude" that mining fluids could be contained based on limited scientific information and weak analysis.

Despite the importance of these issues in the local region and the permanence of impacts resulting from any uranium mining, this is not just a local issue. Any uranium mined under these permits would be shipped to facilities in Illinois and/or Ontario for enrichment, and the byproducts would be shipped to the White Mesa mill site in Utah. And, of course, further enrichment, production of electricity or weapons, and waste disposal would impact additional areas of the country – and potentially the world. Powertech is a multinational corporation based

in Canada, and the resulting uranium could be shipped abroad. It is thus important to all of our organizations to oppose these permits and aquifer exemption.

Given the fact that Otten and Hall of the U. S. Geological Survey are among those who have observed that "To date, no remediation of an ISR operation in the United States has successfully returned the aquifer to baseline conditions," the presumptions of companies who propose this type of mining – and the brave statements by regulating agencies -- must be approached with abundant caution. If no U.S. ISL mine has ever returned the water to baseline, what makes the EPA believe that this unprecedented task will be accomplished at Dewey-Burdock? This question must be addressed explicitly and analyzed thoroughly as a result of a full NEPA process, if the EPA decides to push forward rather than deny the permits and exemption.

The undersigned respectfully request that the EPA stop the permitting processes for the proposed Dewey-Burdock project. At the very least, tribal consultation and a de novo NEPA process are required. At best, the permits and the exemption should be denied.

Sincerely,

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